

WHAT IS CLAIMED IS:

1. An optical antenna comprising:

arrangement means for mounting at different positions a plurality of optical transmitting and receiving means for radiating an outgoing optical signal to space, or for receiving an incoming optical signal from the space; and

an optical system for transmitting, when the optical signal is radiated from said optical transmitting and receiving means, the optical signal to the space with refracting the optical signal to spherical waves, and for focusing, when the optical signal arrives from the space, the optical signal onto said optical transmitting and receiving means.

15 2. An optical antenna comprising:

a plurality of optical transmitting and receiving means for radiating an outgoing optical signal to space, or to receive an incoming optical signal from the space;

arrangement means for mounting said plurality of optical transmitting and receiving means at different positions; and

an optical system for transmitting, when the optical signal is radiated from said optical transmitting and receiving means, the optical signal to the space with refracting the optical signal to spherical waves, and for focusing, when the optical signal arrives from the space, the optical signal onto said optical transmitting and receiving means.

3. The optical antenna according to claim 2, further comprising control means for simultaneously driving said plurality of optical transmitting and receiving means.

4. The optical antenna according to claim 2, further comprising control means for driving any desired optical transmitting and receiving means of said plurality of optical transmitting and 5 receiving means.

5. The optical antenna according to claim 2, further comprising a driving mechanism for making the positions variable of said optical transmitting and receiving means mounted on said 10 arrangement means.

6. The optical antenna according to claim 2, further comprising selecting means for selecting a desired optical fiber from a plurality of optical fibers mounted on said arrangement means, 15 and for connecting the optical fiber selected to said optical transmitting and receiving means.

7. The optical antenna according to claim 6, wherein said selecting means selects an optical fiber corresponding to a 20 position of an object to be measured.

8. The optical antenna according to claim 7, wherein said selecting means makes a position or angle of said optical system variable in response to changes in position of the object to 25 be measured.

9. The optical antenna according to claim 7, wherein said selecting means rotates, when a wedge prism is installed on an object to be measured side of said optical system, the wedge 30 prism in response to changes in position of the object to be

measured.

10. The optical antenna according to claim 7, wherein said selecting means carries out gimbal driving of said optical system
5 and arrangement means in response to changes in position of the object to be measured.

11. The optical antenna according to claim 1, wherein said optical system comprises a first lens having positive refraction power,
10 a second lens having negative refraction power, a third lens having positive refraction power, and a fourth lens having positive refraction power, and wherein said first lens, said second lens, said third lens and said fourth lens are disposed in this order from a side of the object to be measured.